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## **UNIT: 13: INFORMATION SOCIETY**

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### **Unit Structure**

- 13.0 Objectives
- 13.1 Introduction
- 13.2 Information Society Concept
  - 13.2.1 Definition and Meaning of Information Society
  - 13.2.2 Different Perceptions of Information Society
  - 13.2.3 Factors Determining the Arrival of Information Society
- 13.3 Economic Structure and Information society
  - 13.3.1 Measurement of Economic Value of Information
  - 13.3.2 Information Economy
- 13.4 Impact of Information Society on Information Profession
  - 13.4.1 Technological Absorption and Determinism
  - 13.4.2 Social, Cultural and Educational Mission
  - 13.4.3 Information Mediation and User Empowerment
  - 13.4.4 Information Literacy and IT Literacy
  - 13.4.5 Information Society: Developing Countries
  - 13.4.6 Brazil
  - 13.4.7 India
- 13.5 Information Society and Public Policy
- 13.6 Summary
- 13.7 Answers to Self Check Exercises
- 13.8 Key Words
- 13.9 References and Further Reading

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### **13.0 OBJECTIVES:**

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After reading this unit you will be able to:

- identify the origins of the concept “Information Society”, understand its definition and meaning;
- determine the main factors for its arrival;
- distinguish different perceptions associated with the concept “Information Society”,
- explain if the concept has some economic connotation as an ‘Information Economy’ or Information Sector’;
- examine the impact of “Information Society” on Information Profession, and
- discuss the impact of this concept on transformation of Indian Society into an Information Conscious Society.

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### **13.1 INTRODUCTION:**

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Society is not static. In the language of general systems theory, it is an open system, a dynamic set of interrelated social systems, institutions and individuals that act upon and react to the various aspects of the world around it. Open systems exist in a state of flux, continually reacting and adjusting to changing conditions and developments from both within and outside the system. Generally these changes are evolutionary. But, at times factors or influences may arise whose impact is truly revolutionary, forcing a more abrupt and drastic modification in the social system, resulting in wholesale transformations in social institutions and relationships.

Scholars, philosophers and scientists have been predicting such a revolutionary transformation of modern industrial society almost since the Industrial Revolution was accepted as an example of revolutionary social transformation (Matchlup 1962). There have been hundreds of predictions and discussions about the implications of such a transition in a number of articles across different disciplines. Despite the popularity of such concerns about the next stage of societal evolution, there has been little consensus as to the causes and results of the predicted social revolution. Hence, there are almost as many levels for the resulting society as there have been treatments. Though different causes have been identified as transformations, most of the authors agree that the driving force behind the social transformation as being the result of or related to, rapid development and diffusion of Information Technologies. Information Technology, as many researchers have stated, is in the process of evoking fundamental change in the character of our society. After a period of uncertainty, during which it was perceived that the shift was taking place from '*industrial*' to '*post-industrial*' society, the nature of the society has become apparent. The basic aspect that has been emphasised is that since information is rapidly becoming the driving force behind the industrial development of nations, the most appropriate characterisation to depict that process in the community is by the expression 'Information Society'. However, a careful examination of literature concerned with emerging forms of social organisations reveals considerable debate on the precise nature of 'Information Society'. Although, most people concede that Western industrial nations and Japan have experienced dramatic social, economic, and technological changes, there is little consensus on the nature and direction of the change.

“While people all over the world continue to talk about the 'Information Society', and some would even claim to be living in it, there seems to have been little, if any, real progress made in establishing either some form of metrics for this 'phenomenon' or in marshalling the kind of evidence that would result in credibility”. Indeed, the absence of such criteria, might lead to doubts about its status. In fact, some question what it is? Is it a useful social analytical tool, merely utopian forecast or what? There are some who believe that the 'Information Society' concept at present provides neither a coherent tool for social analysis, nor an adequate set of social goals (David Lyon). There was always an element of symbolism about the term, with information serving as a talisman for a new kind of society, a society in which *reason* and *consensus* set the tone rather than raw power and materialism.

In this unit, it is proposed to discuss the 'Information Society' concept, its origin, the main factors determining its arrival, the question whether the concept has some basic economic connotation as an Information Economy or Information Sector, and its impact on public policy and information profession. Since the term

has been used to describe socio-economic systems that exhibit high employment of information-related occupations and wide diffusion of information technologies, the unit also presents some data on the size and internal structure of Work-force in developing countries like India, and includes a brief discussion on the transformation of Indian Society into an information conscious society.

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## 13.2 INFORMATION SOCIETY CONCEPT: EVOLUTION

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The concept of 'Information Society' emerged during the 1970s and through out the 1980s and rapidly gained popularity and currency, its proponents ranging from scholars and academic authors to popular writers. Prominent among the first group of writers were Masuda, who in the Japanese context, perceived an eventual transition of the society to the point at which the *production of information values* became the driving force for the development of the society. The second writer belonging to this group was Tom Stonier, who perceived *the dawning* of a *new age* for Western Society. He draws explicit parallels and contrasts between industrial and information societies. Although not very comfortable with the term 'Information Society', Daniel Bell did much to sustain it through his work on post-industrial society. Daniel Bell, the classical exponent of post-industrialism, also theorised the 'Information Society' (Bell 1980).

In 'The Coming of Post-industrial Society' (1972) Bell argued that the increased part played by science in the productive process, the rise to prominence of professional, scientific and technical groups and the introduction of computer technology, are all evidence of a new '*axial principle*' at the core of socio economic system, namely, the centrality of theoretical knowledge. The emerging social frame work of 'Information Society' builds upon this base. Information increasingly becomes a source of added value and thus of wealth. A growing portion of workers is employed in the 'information' sphere. The important factor, enabling discourse to shift from post industrialism to Information Society is the massive growth in the economic significance of Information Technology.

Although, in its current form it is something of a novelty, it would be a mistake to think that the idea of Information Society is entirely of recent origin. Alongside the analytical strands of thought about social change, we also find another theme, technological utopianism. In fact, the writings of Masuda, Stonier and Naisbitt depict a new kind of society which on one hand, to empirical analysis but, on the other, is full of *good society imagery*. Technological utopianism is especially powerful in the U.S.A. It was felt that the USA would realise through a marriage of nature and mechanics, an unprecedented solution to the problem of industrialisation, allowing us to transcend the typical evils of industrial society. The ideals of decentralised democracy, community participation, an end to hierarchy and class, and of plenty for all, which inspired an earlier generation of technological utopianism, re appear in the literature of Information Society.

Alvin Toffler and John Naisbitt have done much to popularise the concept of 'Information Society'. Naisbitt contended that the United States made the transition from an industrial to an information society as early as 1960s and 1970s, and that in this process the computer played a significant role. On the other

hand, Toffler talked of an *information bomb* exploding in our midst and a *power shift* in society, which will make it depend on knowledge.

The newness and attraction of these ideas and the vigour with which they were expressed, fired the public imagination and helped to sustain the interest in the concept of the Information Society and its literature.

### **13.2.1 Definition and Meaning of Information Society:**

'Information Society' is a much used expression. The term has been characterised by various dimensions. Several authors have tried to define and interpret this term according to their own perceptions. What strikes one in reading the voluminous literature on the Information Society is that "so many writers operate with underdeveloped definitions on their subject. They write copiously about particular features of the 'Information Society', but are *vague* about their *operational criteria*. Eager to make sense of changes in information, they rush to interpret these in terms of different forms of economic production, new form of social interaction, innovative process of production, or whatever. As they do so, they very often fail to set out clearly *in what ways* and *why* information is becoming *more central today*, so critical indeed that it is ushering in a new type of society". One wonders just what is about information that makes so many scholars to think that it is at the core of modern age! Let us try to examine some of the significant definitions provided for the term Information Society in the literature and analyse their main attributes.

#### **Blaise Cronin:**

Blaise Cronin defines Information Society as "one in which labour has been intellectualised; one in which the expression 'to earn one's daily bread by the sweat of one's brow' sounds decidedly anachronistic". He further observes that "what began life as a sociological construct and then became a feature of futurologists' clumsy jargon before degenerating into a media cliché, has finally achieved respectability through endorsement by economic and political analysts".

#### **Manfred Kochen:**

Manfred Kochen writes that the simple notion of a society in which information rather than material flows constitute most of its 'communication and control' exchanges is extended to stress that:

- i) most members generate knowledge by knowledge-based procedures that are knowledge-intensive;
- ii) information consistently reflects social invariants;
- iii) reason and human values rather than strength and expediency manage conflicts between pressures to conserve invariants and pressures for adoptive change.

Having stated all this, Manfred Kochen goes on to say that “an Information Society is a stage in the evolution of “*community brains*”, towards a ‘*world brain*’. This is probably most likely to be the essence of the ‘great transition’ that futurists seem to agree on. When enough people begin to believe it as likely to happen if it is a stage in natural cultural evolution, then this belief may contribute to its self fulfilment ... It will take some decades before this idea is sufficiently wide spread and the first information society appears”.

**Martin:**

On the other hand according to Martin, Information Society “is a society in which the quality of life, as well as prospects for social change and economic development, depends increasingly upon information and its exploitation. In such a society, living standards, patterns of work and leisure, the education system and market place are all influenced by advances in information and knowledge. This is evidenced by an increasing array of information-intensive products and services, communicated through a wide range of media, many of them are electronic in nature”. In this definition, the intention of the author was to *broaden the focus* from the *merely technological or economic*, and to portray the Information Society *as a society*. In other words, the term has come to represent *societies at an advanced post-industrial stage*, characterised by a high degree of computerisation, large volumes of electronic data transmission and *an economic profile* heavily influenced by the market and employment possibilities of Information Technology.

**Branscomb:**

According to Branscomb Information Society is “a society where the majority of people are engaged in creating, gathering, storage, processing or distribution of information”.

### 13.2.2 Different Perceptions of Information Society:

**Frank Webster:**

Frank Webster in his “Theories of Information Society” distinguishes at least five different definitions of an Information Society, each of which presents criteria for identifying the new. These criteria are: technological, economic, occupational, spatial, and cultural. Let us try to examine each in turn.

**Technological Perception:**

The most common definition of the Information Society lays emphasis upon spectacular technological innovation. The key idea is that breakthroughs in information processing, storage, and transmission have led to the application of Information technology (IT) in virtually all areas of society. The major concern

here is the astonishing reduction of the cost in computers, their prodigious increase in power, and their consequent application every where. Although Information Technology occupies a central role in all literature on Information Society, this perspective emphasises the technological infrastructure to the exclusion of other social, economic and political attributes. Martin provided a number of scenarios detailing life in the Information Society specially the spread of *digital networks* as the key element.

The convergence of computing and telecommunications resulted in the linking of computers enabling the establishment of global networks. The development of ISDN (Integrated Services Digital Network) will provide the infrastructure supporting *the key ingredient* of post-industrial society-information. The rapid growth of Internet appears to bring about precisely this change. In other words, the technological perspective of Information Society effectively draws attention to the potential benefits of information technologies for the society. However, with such weighty emphasis on technology, generally removed from a social, cultural and political context, it is unable to provide adequate foundation for defining the attributes of Information Society. Also, the problem of measurement and the associated difficulty of stipulating the point on technological scale, at which a society is judged to have entered an information age, is surely central to any acceptable definition of distinctively new type of society. It is ignored by popular futurists. The authors of this school of thought are content to describe in general terms, technological innovations, presuming that this is enough to distinguish the new society. "There are some serious scholars who encounter two problems. First, how does one come to measure the rate of technological diffusion, and second, *when does a society cease to being 'industrial' and enter into the "Information" category?*" These objections have not been convincingly answered.

### **Economic Perception:**

Some of the authors who write about Information Society point to the growth of service sector in the industrialised nations and to the decline of employment in manufacturing. For some, the dominant characteristic of an Information Society *is the nature of its economy*. Machlup (1962) initiated this research perspective by analysing the growth of the 'knowledge sector' in the U.S. economy. In Machlup's analysis, industries primarily concerned with production and distribution of knowledge (Knowledge Industries) were examined separately, rather than as a part of the overall service sector. The knowledge industries included such areas as the *educational system, the media* and other *communication activities, libraries* and other *information activities* and research / institutes. The contribution of this sector to the gross national product (GNP) was found to be significant (estimated at about 40% for the early 1960s) and growing at a rate considerably higher than the industrial sector. Machlup included that knowledge industries would soon *outpace* the industrial sector, leading to the rise of a '*Knowledge Society*'. A similar conclusion was reached at about the same time in Japan, as Umaseo (1963) predicted the rise of the *spiritual industries*' over material and agricultural sectors in economies that were more developed. These earlier studies distinguished knowledge or information from other economic sectors.

The best known and often cited study on the emergence of an *information economy* conceived on these lines is the report from Marc Porat (1977). Porat (1977) initiated much of this work, by broadening the view of information work to apply to more than those jobs falling within the information or knowledge sector as defined by Machlup. Porat began by defining information activities as including *all resources consumed in producing, processing and distributing information goods and services*. He defined primary information sector as including all those businesses involved in the exchange of information goods and services in the market place. In addition, however, Porat noted that a great many jobs in other sectors of economy can be thought of as information work. Nearly, every organisation produces processes and distributes information for its own internal consumption. Thus, a *secondary information sector* includes these information activities. Porat estimated that overall information activities amounted for 45% of the gross national product in 1967, and that half of the labour force was employed in information-related work. This study has been used to justify references to *United States as an Information Society*. Several authors have attempted to refine Porat's analysis and apply it in other contexts (Komatsujaki, 1986, Schement, Lievrouw, and dordick, 1983). This perspective focuses on the *economy as the primary attribute* of the Information society. It may be stated that examining the economic structure alone provided a *limited view* of the social and cultural implications associated with information societies. Also, several critics contend that Porat's classification of information workers is too broad to be meaningful, and does little to suggest *social implications of the shift to Information Society* (Bates, 1985, Wizard, 1984). Bates, for example, has noted that according to Porat, factory workers assembling information transmission equipment are considered information workers; just as are university researchers. This does not appear to be logical. He felt that such a categorisation may weaken the *social distinctiveness* of the information sector. There are other types of objections and criticisms on Porat's analysis. However, such objections may not entirely invalidate the findings of Porat and are not intended to that. But they are the reminder of the unavoidable intrusion of value judgements in the construction of their statistical tables. As such, they lend support to a healthy scepticism towards ideas of an emergent information economy. Marc Porat has been able to distinguish two information sectors: primary and secondary, then to consolidate them, separate out the non-informational elements of the economy. Porat, by re-aggregating national economic statistics, is able to conclude that 46% of the U.S. GNP is accounted for by the information sector. "The United States is now an Information based economy". As such, it is an 'Information Society (where) the major arenas of economic activity are information goods and service producers, and the public and private (secondary information sector) bureaucracies.

It may be mentioned at this stage that the search to differentiate between quantitative and qualitative indices of an Information Society is not pursued by Machlup and Porat. It is distinction that suggests the possibility that we could have a society in which, as measured by GNP, information activity is of great weight, but that in terms of springs of economic, social and political life, *is of little consequence*. Of course, the economists are concerned solely with developing quantitative measurements of the information sector, so the issue of qualitative worth of information would be of limited relevance to them. However, even on their own terms there are problems. For example, the question "at which point on the economic graph does one enter the information society?" when 50%

of GNP is dedicated to information activities? This may seem to be a reasonable point, one at which, in straight forward quantitative terms, information begins to predominate. Often, even this point is not taken into consideration. In a large scale update of Machlup's study Rubin and Huber concluded that, in the United States, the contribution of 'knowledge industries' to GNP increased from 28.6% to 34.3% between 1958 and 1980, with virtually no change since 1970, this constituting an "extremely modest rate of growth relative to the average rate of growth of other components of total GNP". If we take these economic studies into account – these studies do not prompt us to conclude that the U.S. has entered into the Information Society.

### **Occupational Perception:**

"A popular measure of the emergence of an Information Society *is the one that focuses* on occupational change. In other words, the contention that we have achieved an information society when the predominant occupations are found in information or information related activities. That is to say, that in Information Society, the number of people employed in occupations such as teaching, research and development and activities associated with creative industries (media, design, arts, etc.) out number those employed in factories and other industries. The intellectual ground work for this conception of Information Society was done by Daniel Bell during 1960s. However, it may be pointed out that this definition is presently enjoying much popularity because concern has shifted from a *technological measure towards an occupational notion*. The emphasis here is on a specific group of people called "*symbolic analysts*" – people who do the thinking, planning, innovation and organisation of the 'new economy'. They may be employed in "creative industries" (media, design, arts), consultancy or general management, but a popular idea is that such information workers are the key to future prosperity. The occupational definition of the Information Society is often combined with an economic measure. Porat for example, calculated that by the late 1960s, a little less than half the U.S. labour force was to be found in the information sector. Porat connects the growth in economic significance of information with changing occupational patterns.

It must be mentioned here that the shift in the distribution of occupations is at the heart of the most influential theory of the Information Society. This aspect has been emphasised by Daniel Bell. But, some authors (Robins and others) have criticised Bell. However, it is appropriate to raise some general objections to occupational measures of Information Society. For example, one of the important aspects relates to the methodology for allocating workers to specific categories. The end product-mere statistical figure giving a precise percentage of information workers hides the complex processes by which researchers construct their categories and allocates people to one another. Porat for instance develops a typology to locate occupations that are primarily engaged in the production, processing or distribution of information. His scheme encompasses over 400 occupational types and has been published by the U.S. Census Bureau of Labour Statistics. It is interesting to note that Gouldner (1979) identifies a new type of employees that has expanded in the twentieth century, a new class that is "composed of intellectuals and technical intelligentsia" who, while in part self seeking and often subordinate to powerful groups. According to Gouldner, The new class can provide us with vocabularies to discuss and debate the direction of social change.



In conclusion it may be stated that the challenge to definitions of an Information Society on the basis of a count of raw numbers of information workers should be clear. The quantitative change is not the main issue. Indeed, as the proportion of population, the groups they lay emphasis upon, while they have expanded, remain distinct minorities, at best ranging 20-25% of the workforce. Therefore the measure of workforce as criterion for judging the arrival of the Information Society is liable to be questioned.

### **Spatial Perception:**

This conception of the Information Society though draws on sociology and economics, *has its core* the distinctive *stress on space*. Here, the major emphasis is on the information networks that connect locations and, in consequence, have dramatic effects on the organisation of *time and space*. This aspect has become the most popular index of the Information Society in recent years. It is largely because of the impact of the work by Manuel Cartells entitled the Information Age (1996-1998) in which he describes a 'network society'. In addition to above mentioned influence, Goddard (1991) identified many interrelated elements in transition to an Information Society. Some of these are:

- information is coming to occupy centre stage as the 'key strategic resource' on which the organisation of *World economy is dependent*;
- computer and communication technologies provide the infrastructure that enables the information to be processed and distributed, these technologies allow information to be processed and distributed. These technologies allow information to be handled on an unprecedented scale, to facilitate instantaneous and real time trading, and to monitor economic, social and political affairs on a global stage;
- there has been an exceptionally rapid growth of the 'tradable information sector' of the economy, by which one can highlight the explosive growth of services such as new media (Satellite broadcasting, cable, video) and online databases providing information on a host of subjects ranging from stock market dealings, commodity prices, patent listings, currency fluctuations, to scientific and technological journal abstracts.

Complimenting to these developments has been the radical reorganisation of the World's financial system which led to the collapse of traditional boundaries that once separated banking, brokerage, financial services, credit agencies, and the like. In fact, immediate and effective information processing and exchange economics has become truly global, and with this has come about a *reduction in the constraints of space*. Companies now can develop global strategies for production, storage and distribution of goods and services; financial interests operate continuously, respond immediately, and traverse the globe. In other words, *the boundaries erected by geographical locations are being pushed further and further back* – and with them too the *limitations once imposed by time*. Developments of this nature emphasise *the centrality of information networks* linking together locations within and between towns, regions, nations, continents, and indeed, the entire world.

In many writings, emphasis is put on the technological bases of the information network. With the accounts of an emerging network society, considerable attention is given to advances in and obstacles to the development of an ISDN infrastructure. Most of the thinkers are concerned with the emergence of a

'network market place' emphasise on ways in which networks underline the significance of flow of information. The basic idea here is of information circulating along electronic '*high ways*'. In fact, no one has been able to quantify how much and at what rate information must flow along these routes to constitute an Information Society. Interestingly no one has produced reliable figures capable of giving us an overall understanding of information traffic.

Though no one could deny the fact that information networks are a significant feature of modern societies and facilitate instantaneous communications round the globe and enable databases to be accessed from any place to any place, still some would ask "why should the presence of networks lead analysts to categorise societies as Information economies?" It may be stated that the question what actually constitutes a network is a serious one and it raises problems not only of how to distinguish between the levels of networking but also how we stipulate a point at which we have entered a network / information society.

### **Cultural Perception:**

Of all the criteria employed in the description the Information Society, those which entail changes in *cultural values and mores* are the most difficult to identify and measure. Each of us is aware, from the pattern of our everyday lives, that there has been an extraordinary increase in the information in social circulation.

Developments such as invention of radio, television, and computers coupled with the recent advances in telecommunication networks and media technologies are having great impact on the life styles of people as a whole. All this testifies to the fact that we inhabit a *media-laden* society, but the informational features of our world are more thoroughly penetrative than a short list of television, radio, and other media systems suggests. The new media surround us, presenting us with messages to which we may or may not respond. But, in fact, the informational environment is a great deal more intimate, more constitutive of us, than this suggests. For example the informational dimensions of the clothes we wear, the styling of our hair and faces, the ways in which we work at our image (from body shape to speech, people are intensely aware of the messages they may be projecting and how they feel themselves in certain type of clothes, with a particular hair style, etc).

This intrusion of information into the most intimate realms of our personal lives is complimented by the growth of institutions dedicated to investigating everyday life with symbolic significance. According to Webster, "contemporary culture is manifested more heavily information laden than its predecessors. We exist in a media-saturated environment that means that life is quintessentially about symbolisation, about exchanging and receiving – or trying to exchange and resisting reception – messages about us and others. It is acknowledgement of this explosion of signification that many writers conceive of our having entered an information society". But, no writer attempted to measure this development in quantitative terms but only described our living in a sea of signs, one fuller than at any earlier epoch". In other words, "we are surrounded by more and more information and less and less meaning".

It may be observed that reviewing these varying definitions of information society, makes us feel that these definitions are either or both underdeveloped or imprecise. Whether it is a technological, economic, occupational, spatial, or cultural conception, we are left with highly problematical notions of what constitutes, and how to distinguish, an Information Society. It is essential that we be aware of these difficulties. Though, as a heuristic device, the term Information Society might have some value in helping us to explore the features of the contemporary world, it can not be accepted by all '*as a definitive*'. In other words, though one may acknowledge that information plays a vital role in the Contemporary Society, one has to remain cautious as regards the Information Society scenarios and in asserting that information has become the chief distinguishing feature of modern times.

### **13.2.3 Factors Determining the Arrival of Information Society:**

When we use the phrase Information Society, we usually mean *society as a whole*. The problem is how to distinguish an Information Society and know whether it has arrived? For this, we have, but to listen to the commentators and leaders to perceive the signs all around us. The Information Society is a direct consequence of:

- the data explosion;
- the growing information consciousness and information dependence of society at large;
- accelerating developments in computing and communication technologies.

However, Cawkell opines that “the pre-requisite for an Information Society is a telecommunication based information service infrastructure, which gradually builds up until at some point a critical mass of terminal users will be connected to a more or less universal network”. According to Daniel Bell “the term refers mainly to the social structure of the post-industrial society. It describes the characteristics and the structure of a society of which the driving force will be the production of *information values* and *not material values*. In considering when it will be realised it is necessary to look at the four stages of technological development which have to be achieved:

- Science-based computerisation, where computer is used extensively in national-scale projects;
- Management-based computerisation in both government and business;
- Society-based computerisation in which computer will be used for the benefit of the society as a whole
- Individual-based computerisation where each individual will have access to the terminal and computer information to solve problems, creativity will flourish in this high mass knowledge creation society.

In other words, the most advanced stage of Information Society appears to be high mass knowledge creation society. From the above discussion, it may be inferred that a high degree of computerisation, large volumes of electronic data processing and employment of Information Technology with telecommunication-based information infrastructure are considered to be the main criteria, which signifies whether a society or a nation has entered into Information Society or not.

It is also stressed that “an Information Society *is one in which the use of information is central to social development and organisational management. Strictly speaking the absence or presence of a high degree of automation is not the determining criterion*, though in practice there tends to be a strong positive correlation between *the amount of information in use and the degree of technology penetration*.”

### **Self Check Exercise: 1**

1) Identify the essence of an ‘Information Society’ as can be gleaned from the conceptual analysis.

#### **Note:**

- i) Write your answer in the space given below.
- ii) Check your answer with the answers given at the end of this Unit.

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## **13.3 ECONOMIC STRUCTURE AND INFORMATION SOCIETY:**

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For nearly three decades, the popular theme in social sciences has been that technologically advanced economies are in the process of moving beyond industrial capitalism to *information-based economies* that will bring profound changes in the form and structure of economic system.

The growing awareness that information behaves as an active economic resource, like capital, plant, or human resources, has focussed attention on shifts in occupational activity within developed nations. The state of information in economy has pervasive effects on the working of the economy generally. It has intensified impacts on those sectors that provide information products or services, such as press, television, radio, film, mail, libraries, banks, and other information providers. The establishment of information markets brings about changing conceptions of public and private information as well as the property rights associated with marketable information.

### **13.3.1 Measurement of Economic Value of Information:**

In 1983, Jonscher examined the causes of growth of information sector. He argued that the increased complexity of the production process and the increased output from it, required rapid growth of information sector. The number of information workers grew much more rapidly than the number of production workers.

Attempts to measure the information sector in terms of economic value were made by a few economists like Matchlup (1962) and Porat (1977). Matchlup estimated that in the U.S.A. 136,436 billion dollars or 29% of U.S. Gross National Product (GNP) was spent on knowledge production, processing and distribution. He also found that 29% of adjusted GNP consisted of the output of the knowledge industries. Matchlup estimated that knowledge production has been increasing at an annual rate of 8.8 to 10.6 percent more than thrice the rate of production of other goods and services.

Marc Porat attempted to break down the National Income Accounts for the year 1967 in order to observe that portions may be attributed directly or indirectly to information activities. In doing this he used three measures to compute the GNP. One is *final demand*, which estimates the intermediate transactions that would add up double counting; the second is *value added* which is the actual value added by a specific industry or component of an industry to the product; and the third is the *income or compensation* received by those who create these goods and services. Porat's conclusion was that in 1967, 21.1 percent of the USA's GNP originated with the production, processing and distribution of information goods and services sold in the markets. In addition, the purely informational requirements of planning, coordinating and managing the rest of the economy generated 21.1 percent of GNP. These information activities engaged more than 46 percent of work-force, which earned over 53 percent of all labour income.

### **13.3.2 Information Economy:**

Researchers seem to indicate that the Information Economy can be defined as *the total value occurring from information activities through the production, processing and distribution of information goods and services that are sold by markets* and consumed internally by organisations. A research perspective that places its focus on the Information Economy as the primary attribute of the Information Society has both *conceptual appeal* and *empirical support*. Examining the economic structure alone provides only a limited view of the social and cultural implications associated with "Information Societies". Moreover, the concept and methods employed by these researchers has received substantial criticism. For example, several critics contend that Porat's classification of information workers is far too broad-based to be meaningful, and does little to suggest social implications of the shift to an "Information Society". We have discussed the significance of Machlup and Porat's seminal analyses in the section relating to the economic perception of Information Society.

In concluding this section it may be emphasised that "the contribution of information to successful economic functioning is beyond question, but that is not quite the same as saying that information has become the primary output of developed economies. We are moving towards information based economies, but are a long way from being wholly dependent on the production, sale and exportation of information goods and services for the preservation of our economic well being'(Cronin). At the same time, we must remember that we are about to embark on a new economic order – the knowledge based economies, playing by a new set of rules.

### **Self Check Exercise: 2**

- 2) Tabulate the different definitions given for an Information Society by different authors cited in this section. Bring out the similarities and differences in their approach.
- 3) State the attributes of Information Society.

**Note:** i) Write your answer in the space given below.  
ii) Check your answer with the answers given at the end of this Unit.

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## 13.4 IMPACT OF INFORMATION SOCIETY ON INFORMATION PROFESSION:

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The information profession is the body of people engaged in the generation, collection, codification, storage, retrieval, manipulation, management, dissemination, packaging, evaluation and marketing of information. The primary function of the information profession is to ensure that society will have the information it needs to function. This information should be available to all, to guarantee an equitable distribution of power and the autonomy of individuals.

Perhaps nowhere else, the impact of Information Society more acutely felt than in the information profession. Until recently, the profession's strength came from the fact that it is operated as society's institutionalised information retailer. The universal non-availability of information allowed the profession to play a useful role at *societal, organisational, and individual* levels. In many cases, access to information *was and is via* designated institutions, such as information centres and/or libraries. This pattern has begun to change as a result of fast developments in computing and communication technologies. Technology appears capable of deinstitutionalising information and handing over access to individuals, thus *cracking the mould of the library*. This situation led to what is known as "*information business*". As a result the new information-related industries commonly referred to as *Quaternary industries* came into being. An idea of the work-force employed in these industries could be obtained from studies conducted by Marc Porat and others.

The many challenges facing the information profession in Information Society can be divided into two main categories:

- technological absorption and determinism;
- social, cultural and educational mission.

### Self Check Exercise: 3

4) What are the economic implications of the Information Society?

- Note:**
- i) Write your answer in the space given below.
  - ii) Check your answer with the answers given at the end of this Unit.

#### 13.4.1 Technological Absorption and Determinism:

Technological absorption and determinism refer to the tendency to assume that the shape of the things to come will be inexorably conditioned by the pace of the technological innovation. The *fundamentalists' view* is that the rate of development in computer and communication technology will soon make the traditional librarian / information worker *obsolete*. The most important action that the members of the profession need to take now is to ensure the human face of technology, and to give their profession *the value, form, status and identity* it needs to meet the challenge asserting that human beings come *first*, and technology comes *second*. In other words, whenever a new technology is introduced into the society, there must be *a counter balancing* human response. In fact, this has to surface in a greater measure to avert the misuse of technology.

### 13.4.2 Social, Cultural and educational Mission:

The societal role of the information profession in Information Society is being challenged. How can the profession meet this challenge? What should be its strategy? One of the important roles that the profession might take up is to aid a massive expansion of *updated education system* to provide new, mainly information skills, which will be useful in a smooth transition from an industrial to information economy. That is to shift the labour from manufacturing to knowledge industries.

In today's information society, the citizens might face a variety of challenges to make the most of their role in the knowledge economy. The role of information as *knowledge capital* means that there is a danger of inappropriate commercialisation of information, which can militate against the *optimal social use* of this resource. Also, low levels of *information literacy* can exclude the individual from full membership of and participation in the Information Society. Information professionals are in a prime position to address these problems.

In Information Society, it is stated that information and communications technologies are of increasing importance in many aspects of our lives, and the *ability to access* and to comprehend information are *valuable skills*. Particularly the growth of Internet and the *World Wide Web* is a significant feature of the Information Society. It acts as a *microcosm* of Information Society trends, influences, and issues. Its main purpose as a medium of electronic communication was appropriated by various interest groups, personal, professional, community, government and business. The potential of the web seemed limitless and many *Utopian Information Society visions* seem to have grown from this sense of raw potentiality. However, the commercial sector has been quick to harness the potential of the medium. This resulted in commercialisation of information. The information seeker is forced to enter into a *Faustian bargain with information provider*.

In other words, to access the required information, the information seeker must handover his / her personal details which might be misused. Also, the ubiquitous use of the Internet in study and work creates new areas of concern to information professionals. The proliferation of content across many areas namely the *sheer volume of information* creates *information anxiety* in the minds of information seekers. This bewilderment is doubled when the user encounters large arrays of electronic sources of information. Of course, for the user the use and the immediacy of retrieval becomes as important as the quality of the resource retrieved. This poses most significant challenge to the information profession in the Information Society, *to map and signpost the information landscape*. This has been traditionally the responsibility of the librarian and whilst the information domain is changing the core principles of the profession remain *as important to the society*. Therefore, there is a need for information mediation and user empowerment.

### 13.4.3 Information Mediation and User Empowerment:

There are different ways in which the information profession may carry out the process of mediation. One way is creating databases and systems which use technology *to assist the user in searching*, for example, by providing appropriate *metadata* for electronic resources to ensure that they are retrievable, or by using technology to group information of different types and different locations.

Despite advances in technology, this mediating role seems important. Machines cannot understand the semantic complexities and subtleties of language which may be vitally important in retrieving appropriate resources, therefore, humans have to play a significant role in this process. Alternately, the information profession can mediate by providing access to resources which are *free of a commercial hook*. The mediation role in this context involves carrying out financial negotiations with publishers and other electronic information providers, and in ensuring that appropriate technology *is in place* to allow seamless access to resources.

One more area in which the process of mediation would be required is working towards the use of agreed open standards in content and information formats for the digital environment. There is growing *digital divide* between the information rich (with access to technology, information networks and appropriate skills to manipulate them) and the information poor (locked out of the digital environment through lack of skills and access points). This divide exists at local, regional and international levels. At all levels, this divide becomes more and more significant as the ability to manipulate information becomes increasingly important in an economic context. As the government and other public sector organisations race to deliver services online, there is a danger of increased social exclusion unless there are agents operating within communities who can offer not only access to the digital environment but also the skill in information literacy required to benefit from them. The information profession can contribute some sort of solution to this problem: that is “the information and library community can challenge the inequalities, injustices and chaos of post modern capitalism by building new path ways to knowledge based on values of social justice, universal literacy and the right to know.” (Muddiman, 2003).

#### **13.4.4 Information Literacy and IT Literacy:**

One of the steps towards Information literacy and IT literacy is to understand the difference between *information skills* and *technical skills*. Information skills are the skills required to *evaluate the quality and relevance of information* on the other hand, technical skills are those *skills required to work with the computer and access electronic information resources*. In a knowledge economy both sets of skills are essential. Acquisition of one skill does not guarantee the acquisition of the other. Perhaps, in some sense, due to a *pervasive utopian vision* of technology as a symbol of social progress, information obtained through a computer seems to acquire validity simply from the medium of its delivery. As an example of this one may cite the content of chain of e-mails, which is of *dubious informational* value, yet is consumed by some *as if it were* a public statement of the same reliability as a news paper article.

The speed of communication flows enabled by constant developments in technology demands *information literacy* rather than simply a narrower set of IT skills, in order to process volumes of information that we receive. The role of



information mediation is as important now as it ever has been, if we are to avoid becoming “an information-saturated and simultaneously ignorant society, a scenario that would be not only educationally undesirable but also socially disastrous”.

#### **Self Check Exercise: 4**

5) Examine the impact of the Information Society on Information Profession.

- Note:**
- i) Write your answer in the space given below.
  - ii) Check your answer with the answers given at the end of this Unit.

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### **13.5 INFORMATION SOCIETY: DEVELOPING COUNTRIES**

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The term Information Society has been used to describe socio-economic systems that exhibit high employment in information related occupations and a wide diffusion of information technologies.

Many of the developing countries are also starting to show, if only partially, some of the traits of Information Society. Even so, research on analysis and explanation of this trend among developing countries, is rather scarce. In one such study Katz observes the information work-force in developing countries is driven by the combined impact of three factors:

- the expansion of the government;
- the over supply of educated labour; and
- the managerial complexity.

As per the above observation, expansion of information sector in developing countries is mainly driven by demand function integrated with supply function.

In the following paragraphs let us study the situation prevailing in some of the developing countries.

#### **13.5.1 Brazil**

In the group of countries, which are advancing towards the Information Society Taiwan, Singapore and Brazil merit mention. While Taiwan and Singapore are Asian countries Brazil happens to be Latin (South) American Country.

From the point of view of development, Brazil presents a contrasting picture. Although an educated, well-to-do and predominantly white population is actively involved in the consumption and production of high-tech goods and services, a great portion of the population lives below poverty-line and has no access to basic living conditions, not to mention information and communication technologies (ICT). [ ]

Internet statistics high light such disparity. The Internet Software consortium shows that the *top-level domain name* for Brazil ranked 9<sup>th</sup> in *host count* in Jan. 2003 with a total number of 2,237,527 hosts which are well above some of the developed countries. On the other hand, the figures for access are considerably less. The United Nations Statistics estimate that *14.3million* people were on-line

in Brazil in the year 2002, indicating that only 8.22% of the population were Internet users [ITU estimates].

It may be stated that the socially and economically backward communities are alienated from the benefit of digital revolution. With a view to reducing the magnitude of the *digital gap* and to avoid intensifying the *social gap*, national, regional and local governments are proposing and implementing projects for '*digital inclusion*' of the less favoured communities. In the year 1999, the *Brazilian Information society Program*, sponsored by the Ministry of Science and Technology was launched. The Program envisages the following:

- “construction of more just society, where principles and goals are observed for the preservation of Brazilian cultural identity, based on wealth of diversity;
- sustainability of standard of development that respects differences and pursues regional equality;
- effective participation of society, the corner stone of political democracy”.

All this is to be achieved through actions for integrating, coordinating and fostering in the use of ICT. However, not many concrete steps were taken towards the *implementation of the Information Society* in Brazil. It was left to the Ministry of Science and technology which took office in Jan.2003, to take steps towards the reorganisation of '*digital inclusion programs*'. 'Digital Inclusion' is not only about access to ICT, although ICT happens to be an important concern. 'Digital Inclusion' is about skills necessary to communicate and collaborate with other people over the network in order to make sense of the World around and possess the knowledge generated in the process. The document produced by the participants of the International Work shop on 'Digital Inclusion' in its preamble states:

- “to all the population should be guaranteed the *right of access to digital World*, both in its technical / physical extent (sensitisation, contact and basic use) and in its intellectual extent (education, training, generation of knowledge, participation and creation)”.

### **Telecentre Concept:**

In Latin America, an important movement has been promoting ways of applying ICT in the region. *Somos@Telecentros* is a regional network whose objective is to strengthen the *digital inclusion initiatives* in Latin America. In a recent document that reports *the state-of-the-art* of telecentres in the region, the network supplies a definition for *telecentre*. This definition encompasses the community aspect in addition to considering the economic marginalisation of the communities and the power of the technology to reduce the *digital divide*. Delagadillo (2000) defines it as “a space where people have access to make use of ICTs as means to impact the development of their communities, improving the quality of their lives and influencing public policies in telecommunication access. Telecentres are places that offer public access to the Internet and try to accelerate this process to reach people that do not have resources to buy a telephone line or a personal computer. Facilitating access to the Internet is sought to reduce the enormous technological gap of many third-world countries”.

In case of Brazil the understanding is that *a telecentre* should provide more than just training, which is often the *first and main activity*. A definition for telecentre

proposed by the International Workshop on 'Digital Inclusion' is that "telecentres are initiatives that make use of ICT, connected to the Internet, to guarantee public and universal access in order to promote acquisition, generation, mining and distribution of knowledge, aiming at facilitating and stimulating community participation". Knowledge exists when individuals are able to appropriate information and transform it into experience. In order to accomplish it, the individual must be able to find the information needed, *evaluate it* and *use it effectively*. *Access to and training in, ICT skills are essential* to achieve this goal. However, *unless they develop information skills to the point of becoming information literate*, people may not be able to grasp *anything but data*".

The government of Brazil is alive to the fact that the idea of access to information via *ICT is a new social right* and undeniably necessary to the *realisation of the citizenship*. Hence, the state has an obligation to develop public policies to accomplish this social right. To fulfil this obligation, it initiated the *community telecentre project*. It is characterised by:

- a bond with a city neighbourhood where the population clearly suffers from the consequences of social exclusion;
- the identification in communities of leadership and a degree of social organisation;
- the community autonomy to decide about the technology applications required and the services offered;
- the responsibility of the community involved to attain sustainability of a telecentre;
- an educational program aimed at empowering telecentre *monitors* to fully exploit the potential of the medium for social inclusion; and
- a management committee representative of the local community, the municipality, and partners.

A community centre includes a *room* in a public and easily accessible place, equipped with 12 microcomputers connected to the Internet, fax and copy machines, printer and scanner. The acquisition and installation of equipment plus the connection charges to the Internet are funded by the municipality. In addition, the local government pays the staff that could consist of an administrative coordinator and a number of *monitors*, all members of local community. The local community is to meet other operational costs. The first community centre has been established in Port Alegre.

One of the problems faced in the implementation of community telecentre is provision of appropriate *monitors* with necessary skills. For this purpose, the partnership of the Federal University of Rio Grande do sul was sought and the Faculty of Library Science and Communications has been entrusted with the task of developing suitable manpower. In fact, training was provided to the first group of *monitors* comprising 20 persons. This program has been ranked by the participants as successful and highly rewarding for allowing the interchange of *academic knowledge* and *practicing knowledge*. However, *evaluation of telecentres project as a whole* has not yet been undertaken by the government.

At the World Summit on Information Society, Brazil succeeded in pushing progressive solutions for the realisation of the Information Society. One of the significant suggestions was that "the construction of an Inclusive Information Society requires the consolidation of *broad and flexible concept of intellectual*

*property* that takes into account not only of *the need for protection*, but also, *the imperative of universal access*, so that we avoid condemning the developing countries to backwardness and their population to ignorance.” In other words, Brazil advocated development of solutions based on *free software*.

In conclusion, it must be emphasised that Brazil is taking *decisive steps* to ensure that its people will be able to fully participate in the benefits of new technologies. The government has established a *bold* and *wide-ranging* programme called “Information Society” aimed at putting all Brazilians in touch with new developments in information technology.

#### **13.5.4 India**

After achieving independence in 1947, India has embarked on industrialisation. However, the industrialisation has not been accompanied by a structural shift of labour force from the traditional occupational categories. Industrialisation has been grafted on to a society that continues to function to a large extent in its traditional mode. As a result, many occupational roles in services sector that could be contributing to the efficiency and productivity of the primary and secondary sectors have not been created. Also, the significance of information technology (IT) as an important contributor to the achievement of national developmental goals did not receive adequate attention of the government. As a consequence, there has been low level of information consciousness in the people compared to the people of developed countries.

It may be stated that in India, only 10% of the work-force constitute white collar workers, and approximately 60% are farmers. An estimated 65% of the population are illiterate and their lack of education prevents them from widely sharing the benefit of information sector in society. Even so, within the huge population exceeding over 800million citizens, several million urban educated individuals are there whose life-styles are similar to those of the information workers in developed countries. Information workers in India, while still a small percentage of the population, are steadily growing in numbers and importance. The reason for this is the government’s policies towards IT. The use of IT increasingly being seen as a powerful agent for economic development through products and service industries generated directly or indirectly. Also, the government feels that use of IT can help enhance the working of markets and reduce transaction and coordination costs within and across firms and institutions, and this is of particular relevance to developing countries which are characterised by very high transaction costs and slow moving logistics. Further applications involving IT have also been considered a source of productivity gains and quality improvements in areas as varied as agriculture, manufacturing, infrastructure, public administration and services such as finance, trade, distribution, marketing, education and health. In other words, IT has become a critical infrastructure for competing in an information-intensive global economy.

Government policy has played a significant role in the creation and development of India’s IT industry. Policies based on the economic philosophy of import substitution during the seventies and eighties have given way to those aimed at liberalising and globalising the economy in the 1990s. The criticism against India’s IT policies is that “in general, policies have tended to ignore IT

consumption and diffusion issues as well as the need for domestic orientation in software. To fully exploit the developmental potential inherent in IT, both the government and industry need to pursue strategies that rapidly develop the domestic market for IT and emphasise IT consumption and diffusion, as against mere production or exports.” (Harindranath)

The salient features of developments taking place in Information and Communications Technology (ICT) sector in India are briefly discussed in the following paragraphs of this section.

During the last one decade or so good progress has been made on many dimensions relating to the ICT sector in the country. For example, the IT market as share of GDP (Gross Domestic Product) has increased from 1.22% in 1997 to an estimated 3.15% in 2003. The size of IT market has increased from US \$ 5 billion to US \$ 16.4 billion over the same period. The success of Indian ICT sector has also enhanced India’s export performance. While the software exports accounted for 5% of the country’s total exports in 1997, this share has grown to more than 20% in 2003. In other words, the ICT sector has made significant progress in establishing a global reputation for itself.

During the period 1970-1980, the Indian ICT sector thrived by selling its abundant supply of low cost skilled programmers to firms in developed nations. Much of the work was done at customer’s sites and the tasks largely involved programming legacy applications. However, during 1990s the focus in the ICT sector shifted to *software quality and project management*. Indian ICT companies invested in creating high quality software processes and in pioneering a model of reliable global delivery. Firms embraced innovating quality techniques such as the *Capability Maturity Model (CMM)*.

The shift from being seen as a low cost provider of routine programming skills to a high quality supplier of advanced applications was really a great shift. Though ICT revenues have fallen globally during 2002-2003, the Indian market indicated a growth of 25% (i.e. the domestic market recorded a 13% and export revenues 30%). Much of this growth has been attributed to the increase in the export of IT-enabled services such as *Business Process Outsourcing (BPO)*. *Business pressures for increased productivity are facing global firms to outsource many of their business processes* and India has benefited from this *ongoing shift*. At the same time Indian firms are engaging with customers in more complex projects and are in many cases moving up the *value chain* by Providing IT consulting and *value-adding domain knowledge*.

The development of Indian ICT sector is unbalanced across major lines IT services. From a global perspective “India has a significant presence in only two of the ten major IT services – *custom application development* and *outsourcing*. In 2001, India had a global market share of around 14-16% in these two service lines account for only around 10% Of the global IT services market. In other major IT services lines, such as *system integration* (accounts for 22% of the global services market), IT outsourcing (18%), packaged software installations and support (13%) and hardware support and installation (13%), the Indian market share is less than 1 %’ (NASSCOM Strategic Review, 2003, p.34).

It must be mentioned here that while most leading Indian ICT companies are poised for rapid growth, few have invested in creating their own intellectual property (IP). The revenue potential of native IP is usually illustrated by comparing the revenues / employee. Microsoft (approximately US \$ 560,000) and Infosys (approximately US \$ 59,000). In the absence of home-grown IP, the fundamental business model of revenue growth remains the function of the total number of employees. Given the growth targets set by NASSCOM (US \$ 77billion in revenues by 2008) the Indian ICT sector *will face a short fall* of more than *250,000 knowledge workers in five years' time*. Tight labour markets will accentuate the annual increase in the ICT employee salaries and decrease the competitiveness and margins of Indian firms.

It is of interest to note that the domestic investment in ICT has been stunted. India currently spends a small fraction of its GDP on IT- about 1.1% when compared to US which spends about 5% of its GDP on IT. As per NASSCOM estimates, it was mentioned that the domestic software market might decline to around 13% in 2002-2003 from about 18% of the previous year. Other interesting points that emerge are: in India, the penetration of PCs (9 per 1000) and the Internet (about 16.5million subscribers) is very low even when compared with the other developing nations such as China (PCs 36 per 1000 and Internet users 68million). One of the reasons for this appears to be the high hardware costs. It is stated that India has one of the highest tariffs rates for PCs. It is interesting to note that while it would take about *12 days of per capita income* to buy a PC in USA; it would take four months per capita income in China, and two years worth of per capita income to buy a similar PC in India! The low level of PC and Internet penetration in Indian society combined with low investments in domestic ICT by Indian companies has retarded the growth of electronic commerce in India.

The authors of “India’s Information Revolution”, Singhal and Rogers having analysed and interpreted the factors leading to information revolution observe that “whether the information workers will ever out number farmers and other industrial workers is a problematic, as it will depend on government policies, world-wide competition in microelectronics and other unpredictable factors... as India moves towards becoming an Information Society”. On the face of it, this observation may sound to be a tall claim, but, on closer examination of India’s ICT base, and the progress it has made during the last decade, it may not far from truth to believe that india is on its way to becoming an information conscious society and Indian Economy might exhibit some traits of *information based economies*, at least by the second decade of 21<sup>st</sup> century.

**Self Check Exercise: 5**

6) Briefly describe the traits of the Information Society as reflected in the developing countries like India.

- Note:** i) Write your answer in the space given below.  
ii) Check your answer with the answers given at the end of this Unit.

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### 13.6 INFORMATION SOCIETY AND PUBLIC POLICY

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The claim that we are entering the Information Society has some important policy implications. If that claim is mistaken or incorrect, it is surely the task of social analysts to draw attention to this and to suggest modifications or alternatives.

In his book '*Social Science and Public Policy*', (1976), *Martin Rein* observes that *Social Science* is a form of 'story telling' dependent upon analogy, metaphor, and so on. The 'Information Society' concept is part of such story. It depends up on analogy (with the familiar image of industrial society) and metaphor (social activities being predominantly bound up with information and its technological objects like computers). However, in this story what is observable appears as more or less inevitable trends which are also desirable.

The validity of the received 'Information Society Story' has been tested in several ways and found wanting. Nonetheless, as a problematic which alerts us to crucial social trends (and may be transformations) it may still have a significant policy related role. This aspect is clearly revealed from the following actions of different governments. The British Department of trade and Industry, for instance, uses a booklet entitled '*Information Technology : The Age of Electronic Information*' to encourage firms in their use of microelectronic – based technologies. It will, they say 'revolutionise' the handling, 'storing and processing of information'. It will also transform our way of living.

This conviction about the social transformation is at the back of the other policy background documents as well. The Science Council of Canada produced a report for the Ministry of Supply for Science and Technology, entitled "*Planning Now for Information Society: Tomorrow is too late*", (1982). More recently the same body issued "*The Uneasy Eighties : The Transition to an Information Society*", (Cordell, 1985). Microelectronics advances are causing a world wide technological revolution which all societies must accommodate; (Science Council of Canada, 1982, p.10). In Canada's case the ability to make a successful transition to an efficient, integrated Information Society depends on the strength of telecommunications infrastructure.

Many similar reports (including the Canadian) quote the well known French study by Simon Nora and Alain Minz "The Computerisation of Society", (1980). Interestingly, this report, while stressing the revolutionary nature of new technologies, along with their social and political impacts, also calls for a more cautious and measured approach: 'In order to make the Information Society possible, it is not only necessary to have knowledge but also to have time. The reciprocal learning process of the disciplines and aspirations takes place slowly...' (Nora and Minz, 1980).

Japan was probably the first to use the term Information Society in the context of technological change and policy formulation. In the 1970's several commentators wrote about Johoka (Information Society) as the social equivalent of biological evolution. Yoneji Masuda wrote '*The Plan for Information Society : A National Goal towards the Year 2000*' and many of the ideas / it contains have been adopted by the Ministry of International Trade and Industry (MITI) in Japan. Masuda sees his work on Information Society as both an analysis of what is happening, and a 'blue print' for policy information.

As a conclusion to this section it may be stated that a number of different observers – analysts and policy makers – insist that the diffusion of information technologies will bring about an Information Society. The production, processing and distribution of information is becoming a central activity of the society. Thus, it is not surprising to hear the claim that 'the concept of the Information Society' proposed in the works of such American writers as Machlup, Bell and Porat is providing the foundation for a new paradigm for policy research and analysis (Edgar and Rahim, 1983).

### **Self Check Exercise: 6**

7) State the policy implications of an Information Society.

- Note:**
- i) Write your answer in the space given below.
  - ii) Check your answer with the answers given at the end of this Unit.

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## **13.7 SUMMARY**

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From the detailed discussion contained in this unit of Information Society, we can draw some general conclusions. Though many scholars agree that we are in the process of transformation to an 'Information Society', there appears too little consensus on the inherent nature of such society. The writings certainly reveal some dimensions of 'Information Society'. The degree of emphasis given to these dimensions, the context in which they are used, and values given to them may differ. It is unlikely that any single perceptive of 'Information Society' may accurately represent the many manifestations to be found in the advanced nations of the World, which are *alluded to as Information Societies*. However, the following aspects may be considered:

- I. The 'Information Society' theory emerged as a *social forecast* or as a *model of social possibilities* and that these have *some how been translated into views of reality and perceptions of actual societies*, measured against conditions in the real world.
- II. Most of the authors who have written about the Information Society, have projected *the growth of service sector* in the industrial nations and the decline of employment in manufacturing, high-lighting the fact that the dominant characteristic of an 'Information Society' *is its nature of economy*, which is rapidly transforming from an industrial based economy to an information based economy. It may, however, be stated that economic structure alone provides only a limited view of the social and cultural implications.



- III. A second perspective of *Information Societies* that emerges out of the literature is concerned with the consumption of information goods and services rather than their production. This research perspective is primarily concerned with the *behavioural patterns of consumption of information goods and services*.
- IV. The third perspective emphasises diffusion of computer and telecommunications technologies (ICT) *as the defining characteristic of an Information Society*. In other words, this approach emphasises the technological infrastructure almost to the exclusion of other social, economic and political attributes.
- V. Some authors recognise that technologies are a political and cultural product and that their implementation and use *will serve the interests of those in power*. The Information Society in the view of these authors, is characterised by *economic and information inequities, unemployment among masses, deskilling of jobs to weaken the power of workers and domination of governments* by large multinational organisations.
- VI. ‘Bangemann Report’ pictures a particular perception of Information Society – an *information market-based society* in which the competitive survive and the consumer pays, if one is unable to pay or to operate effectively with in the system, then *social Darwinism takes its course* and one joins the *underclass*.
- VII. In the final analysis, acceptance of the idea of society as Information Society is still largely *a matter of faith, or at least of perception*. Proponents of the concept appear to have taken the *sheer volume information* in circulation and its undoubted worth in economic terms, as evidence of Information Society. Hence, says Webster, “we have an assessment of information in *non-social terms – it just is* –but we must adjust to the social consequences. Therefore, if we are to understand the nature of Information Society and what makes it different from previous social systems, we need a much deeper understanding of the *qualitative dimensions of information*. We also need the *ability to recognise Information Society when we see it!* For the foreseeable future therefore, it seems advisable to treat the Information Society *as a concept* rather than *an actuality*. It serves a useful purpose both by helping us focus attention on the nature of *social change* and *as a device* by which change can be assessed. It remains on the horizon, rather *more idea* than *entity* but with these qualifications, it is none – the less valuable for all that”.

In conclusion, the idea of Society as ‘Information Society’ continues to exercise certain amount of appeal. It somehow captures *the feel of modernity* and of *society moving along exciting technological trajectories* which are freeing mankind from the tyranny of *time and distance!*

### 13.8 ANSWERS TO SELF CHECK EXERCISES

1) A number of scholars, scientists and philosophers have been predicting a revolutionary transformation of modern industrial society. Many causes have been identified and attributed as forming the driving force behind such a transformation. However, most people opine that “information” is the defining feature of modern

world. We are told that we have entered an information age and are rapidly moving towards “global information economy”. Many writers identify an entirely new phenomenon called Information Societies – the examples of which are found in the United States, Britain, Japan and Germany.

“Information Society” is a concept which sees the transition of an Industrialized Society into one in which information – in its broadest and most diverse forms – is the key driving force.

Two major factors underline the Information Society claims. Firstly, that the society is becoming increasingly centered on information handling, processing, storage and dissemination using micro – electronics – based technologies, made available through the convergence of computer with telecommunications, namely ICT. And secondly, that this shift is reflected in an emerging occupational structure, in which the category of “information workers” has become predominant. In other words, the Information Society appears as an out come of technological and economic changes.

## 2) Different definitions of Information Society and their approaches:

Blaise Cronin	Martin	Manfred Kochen
* Labour has been intellectualised;	* Represents societies at an advanced post-industrial stage;	* Information rather than material flows constitute most of its communication and control exchanges;
* to earn one’s daily bread by the sweat of one’s brow sounds anachronistic;	* Information consistently reflects basic societal invariants;	* high degree of computerisation, large volumes of electronic data transmission;
* started as a social construct and became a feature of the futurologists and now gained respectability from economic and political analysts.	* reason and human values rather than strength and expediency manage conflicts;	* an economic profile heavily influenced by market and employment possibilities of IT.  * a stage in the evolution of community brains towards a world brain.

3) Attributes of an Information Society are:

i] shift from an industrial economy to an information economy.

That is to say that in industrial economy *capital* is the strategic resource, while in Information Economy information becomes the strategic resource;

ii] a telecommunication based information service infrastructure;

iii] a high degree computerization, large volumes of electronic data transmission and employment of IT;

iv] characterised by the fact that the rapid and convenient delivery of needed information is the ordinary state of affairs.

4) Economic Implications of Information Society:

Information Society might be characterized by different dimensions. One of these relates to the economic structure. We come across several references in literature of the economic implications of the Information Society.

The state of information in the economy has pervasive effects on the working of the economy generally. It has great impacts on those sectors that provide information products and services such as press, television, radio, film ..... libraries and other information providers.

Matchlup initiated studies analyzing the growth of “knowledge Sector” in the US economy. The knowledge industry included such areas as the educational system, the media, and other communication activities, libraries and other information activities and research institutions. Machlup’s finding was that the contribution of this sector to the Gross National Product (GNP) was 40% for early 1960s and is growing at a rate which is higher than the industrial sector.

Marc Porat, who continued the research in this direction, enlarged the scope of information work to include all the jobs falling within the information or knowledge sector as defined by Matchlup. According to Porat information activities included all resources consumed in producing, processing and distributing information goods and services. Porat estimated that these activities amounted for 45 % of the GNP in 1967.

In conclusion, it may be emphasized that the contribution of information to successful economic function is beyond doubt. However, it is not quite the same as saying that information has become a primary output of all developed economies. We may say that we are moving towards Information – based Economies, but not wholly dependent on the production, sale and exportation of information goods and services for the preservation of our economic well being.

5) The information profession is the body of people engaged in the generation, collection, codification, storage, retrieval, manipulation, management, dissemination, packaging, evaluation and marketing of information. The primary function of the information profession is to ensure that society will have the information it needs to function. This information should be available to all, to guarantee an equitable distribution of power and the autonomy of individuals.

Perhaps nowhere else, the impact of Information Society more acutely felt than in the information profession. Until recently, the profession's strength came from the fact that it is operated as society's institutionalised information retailer. The universal non-availability of information allowed the profession to play a useful role at *societal, organisational, and individual* levels. In many cases, access to information *was and is via* designated institutions, such as information centres and/or libraries. This pattern has begun to change as a result of fast developments in computing and communication technologies. Technology appears capable of deinstitutionalising information and handing over access to individuals, thus *cracking the mould of the library*. It is also being stated that the rate of development in ICT might make the information workers obsolete. The social role of information profession in the Information Society is thus being challenged. In view of such challenges, the information profession has to reformulate its strategies and programmes giving *value, form, status and identity* to the profession. One of the important roles that the profession might take up to aid a massive expansion of *updated education system* to provide *new information skills*, which will be useful in a smooth transition of the society from an industrial to information economy. That is provision of skill-oriented education enabling the labour to shift from manufacturing to knowledge industries.

In today's Information Society, the citizens might face a variety of challenges to make the most of their role in the *knowledge economy*. The role of information as *knowledge capital* means that there is a danger of inappropriate commercialisation of information, which can militate against the *optimal social use* of this resource. Also, low levels of *information literacy* can exclude the individual from full membership of and participation in the Information Society. Information professionals must address these problems. In Information Society, it is stated that information and communications technologies (ICT) are of increasing importance in many aspects of our lives, and the *ability to access and to comprehend information* are *valuable skills*. The growth of Internet and its use by many people in study and work creates new areas of concern to information professionals. The proliferation of content across many areas, namely *the sheer volume of information* creates *information anxiety* in the minds of information seekers. This bewilderment is doubled when the user encounters large arrays of electronic sources of information. For the user, the *use and the immediacy of retrieval* becomes *as important as the quality of*

*resource retrieved.* This poses most significant challenge to the information profession in the Information Society, *to map and signpost the information landscape.*

To overcome the above mentioned problems, and to help the information seekers, the information profession must engage itself in *Information Mediation* and *User Empowerment*. There are different ways in which the profession may carry out the process of mediation. One way is *creating databases and systems that use technology to assist the user* in searching, for example, for providing appropriate *metadata* for electronic resources to ensure that they are retrievable, or by using technology to group information of *different types* and *different locations*.

The second type of activity that the information profession might engage in is *Information Literacy* and *IT Literacy*. In fact, this involves distinguishing between *information skills* and *technical skills*. Information skills are the skills required to *evaluate the quality and relevance of information*, on the other hand, *technical skills are those skills* required to work with computer and *access electronic information resources*. In a knowledge economy, both sets of skills are essential. The information profession should not only specialise in these skills and also impart these to people at large.

In conclusion, it may be emphasised that the above discussed aspects are *the impact of the Information Society* on the information profession.

6) The term Information Society has been used to describe socio-economic systems that exhibit high employment in information related occupations and wide diffusion of information and communication technologies (ICT).

Many of the developing countries are starting to show partially some of the traits of the Information Society. Let us briefly discuss the situation obtained in developing nations like India.

**India:**

Though India has embarked on industrialisation after its independence in 1947, the industrialisation has not been accompanied by a structural shift of labour force from the traditional occupational categories. Also, the significance of IT as an important contributor to the achievement of national developmental goals did not receive adequate attention of the government in the beginning. As result, there has been low level information consciousness in the people of the country compared to the developed countries.

But in recent years, the government realised the fact that *IT has become a critical infrastructure for competing in an information-intensive global economy*. In fact the government has adopted a proactive policy, which played a major role in the creation and development of IT industry in India. During the last decade or so good progress has been made on many dimensions relating to ICT sector in the country. The IT market share of GDP (Gross Domestic Product) has increased and the ICT sector made significant progress in establishing a global reputation for itself. Even though, the

information sector in India forms a small portion of the total workforce, it is steadily growing in importance, and started to contribute to the growth of GDP in a small measure. It must be mentioned that the IT policies of the country tended to ignore IT consumption and diffusion issues as well as the need for domestic orientation in software. To fully exploit the development potential inherent in IT, both the government and the industry need to pursue strategies that rapidly develop the domestic market for IT and emphasise IT consumption and diffusion, as against mere production or exports. When this happens, the IT infrastructure will certainly improve and the employment in information related occupations will record an upward rise. This will surely pave the way to the transition of Indian Society towards the Information Society. These developments are the indicators or traits of India moving though partially, towards the achievement of information-based economy.

7) Despite various national and cultural variations, the idea that the advanced societies are entering a new phase of history is a common theme of economic and political discourse. The concept of Information Society is intended to evoke a new image, contrasting with the old image of industrial society.

There are many hints in policy of out comes this revolution is expected to bring forth. The validity of Information Society has been tested in many ways and has been found wanting. However, as a problematic which alerts us to crucial social trends, it may have a significant policy related role. This aspect is clearly revealed from the actions of different governments. The British Department of Trade and Industry, for instance, uses a booklet entitled '*Information Technology : The Age of Electronic Information to Encourage Firms in their Use of Microelectronics-based Technologies.*' "It will, they say, revolutionise the handling, storing and processing of information. It will also transform our way of living."

The conviction about social information is at the back of other policy background documents as well. The Science Council of Canada produced a report of the Ministry of Supply which advocates the use of microelectronics, and emphasises the significance of the strength of telecommunications infrastructure in transforming Canadian Society into an Information Society.

The well-known French study by Nora and Minz, while stressing the revolutionary nature of the new technologies along with their social and political impacts, also calls for a more cautious approach. In order to make the Information Society possible, the report maintains that it is necessary to have knowledge but also to have time. Japan was probably the first to use the term Information Society in the context of technological change and policy formulation. '*The Plan for Information Society : A National Goal towards the Year 2000*' by Masuda has been adopted by the Ministry of International Trade and Industry (MITI) in Japan. Masuda sees his work on Information Society as both an analysis of what is happening, and a 'blue print' for policy information.

Thus, it is not surprising to hear the claim that ‘the concept of the Information Society’ proposed in the works of such American writers as Machlup, Bell and Porat is providing the foundation for a new paradigm for policy research and analysis.

### **13.9 KEY WORDS**

**Information Economy** : The total value of accruing from information activities through the production, processing and distribution of goods and services that are sold by markets and consumed internally by organisations, is defined as Information Economy. Advanced countries are evolving as information economies in which information is the key factor in the economic growth of the nation. The major components of such an economy are:

- i) information work-force;
- ii) information goods and services;
- iii) emergence of Information Industry and markets; and
- iv) information infra structure.

**Information Profession** : The Information Profession is the body of people engaged in the generation, collection, codification, storage, retrieval, manipulation, management, dissemination, pack-aging, evaluation and marketing of information. OECD categorised information professionals as:

- i) information producers;
- ii) information processors;
- iii) information distributors; and
- iv) information infrastructure.

**Information Ratio** : Based on the work of Machlup and Emaseo, the Japanese initiated a series of studies attempting to measure the degree of **Johoka** in Japanese Society. One of the indices developed for this purpose by RITE was Information Ratio; which was defined as the ratio of household expenditures for various information-related activities to total household expenditure.

**Information Work-force** : The term Information work-force has acquired a wider connotation and includes many groups who are involved in a variety of information-related occupations. The OECD categorisation includes: Information producers, Information processors, Information distributors and Information Infrastructure occupations under this category, while Marc Porat defined three sub-sectors of the work-force as:

- i) Workers whose final product is information.





- ii) quality of information activities, as well as the information ratio are the main attributes of Information Society. The Johoka perspective advises us to look beyond the occupational structure, and incorporate the communication and information behaviors of people into our definitions of Information Societies.

### **Post-industrial Society**

The concept emphasises the centrality of theoretical knowledge as the axis around which new technology, economic growth and the ramification of the society will be organised. Empirically, one can try to show that this axial principle is becoming more and more predominant in advanced industrial societies.

In the writings of Masuda, Stonier and Naisbitt we come across a dreamy picture of a new kind of society which on the one hand appeals to empirical

## **13.10 REFERENCES AND FURTHER READING**

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